

## Step Up 2 Click



PID: MIKROE-6076

**Step Up 2 Click** is a compact add-on board designed to boost the power capabilities of devices. This board features the TPS61299, a synchronous boost converter from Texas Instruments. This component is renowned for its low quiescent current and high efficiency under light-load conditions. The board distinguishes itself with the ability to adjust output voltage via the integrated MAX5419 digital potentiometer, offering precise control through an I2C interface. It supports external voltages from 0.2V to 5.5V, delivering a regulated output range of 1.8V to 5.5V. Compatibility with 3.3V or 5V logic levels, selectable via the VCC SEL jumper, makes it useful for various MCUs. This Click board™ finds its application in powering devices that rely on alkaline or coin cell batteries, making it perfect for portable electronics, wearables, and small-scale IoT devices.

Step Up 2 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the [mikroBUS™](#) standard. It comes with the [mikroSDK](#) open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this [Click board™](#) apart is the groundbreaking [ClickID](#) feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

### How does it work?

Step Up 2 Click is based on the TPS61299, a synchronous boost converter with an exceptionally low quiescent current from Texas Instruments. It is designed to provide efficient power solutions for devices powered by alkaline or coin cell batteries, boasting high efficiency even under light-load conditions to extend operational time. This component also stands out for its additional current limit functionality, ensuring optimal performance and reliability. With the ability to operate by simply using the EN pin from the mikroBUS™ socket for device

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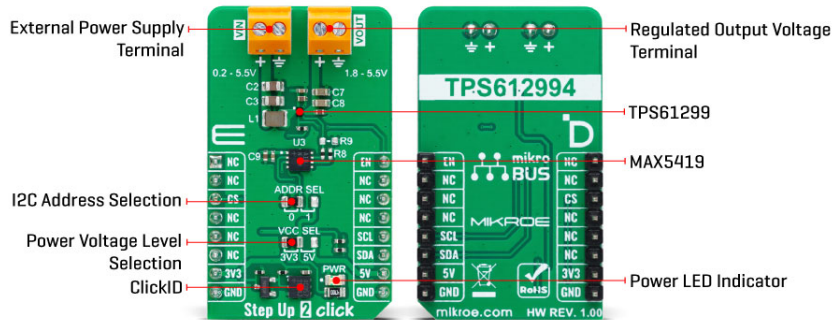


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enablement - a high logic signal activates the device, whereas a low logic signal deactivates it—this boost converter exemplifies efficiency and ease of use.



The Step Up 2 Click also integrates the MAX5419, a digital potentiometer from Analog Devices, for precise output voltage adjustments, as well as ADDR SEL jumper. This jumper allows for seamless selection of the I2C address of the MAX5419, leveraging the I2C interface for meticulous control. Supplying an external voltage range from 0.2V to 5.5V via the VIN terminal, the board offers a regulated output voltage range from 1.8V to 5.5V at the VOUT terminal - adjustable through digital potentiometer configuration.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

## Specifications

|                  |   |
|------------------|---|
| Type             | Boost   |
| Applications     | Ideal for portable electronics, wearables, and small-scale IoT devices  |
| On-board modules | TPS61299 - synchronous boost converter from Texas Instruments   |
| Key Features     | Adjustable output voltage, ultra-low quiescent current, high efficiency, fast transient performance, low power consumption, logic for MCU compatibility, and more |
| Interface        | GPIO, I2C   |
| Feature          | ClickID   |
| Compatibility    | mikroBUS™   |
| Click board size | M (42.9 x 25.4 mm)  |
| Input Voltage    | 3.3V or 5V, External  |

## Pinout diagram

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This table shows how the pinout on Step Up 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

| Notes        | Pin         |  |      |     |    | Pin        | Notes         |
|--------------|-------------|---|------|-----|----|------------|---------------|
|              | NC          | 1   | AN   | PWM | 16 | <b>EN</b>  | Device Enable |
|              | NC          | 2   | RST  | INT | 15 | NC         |               |
| ID COMM      | <b>CS</b>   | 3   | CS   | RX  | 14 | NC         |               |
|              | NC          | 4   | SCK  | TX  | 13 | NC         |               |
|              | NC          | 5   | MISO | SCL | 12 | <b>SCL</b> | I2C Clock     |
|              | NC          | 6   | MOSI | SDA | 11 | <b>SDA</b> | I2C Data      |
| Power Supply | <b>3.3V</b> | 7   | 3.3V | 5V  | 10 | <b>5V</b>  | Power Supply  |
| Ground       | <b>GND</b>  | 8   | GND  | GND | 9  | <b>GND</b> | Ground        |

## Onboard settings and indicators

| Label | Name     | Default | Description  |
|-------|----------|---------|--|
| LD1   | PWR      | -       | Power LED Indicator  |
| JP1   | VCC SEL  | Left    | Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V |
| JP2   | ADDR SEL | Left    | I2C Address Selection 0/1: Left position 0, Right position 1               |

## Step Up 2 Click electrical specifications

| Description           | Min | Typ | Max | Unit |
|-----------------------|-----|-----|-----|------|
| Supply Voltage        | 3.3 | -   | 5   | V    |
| External Power Supply | 0.2 | -   | 5.5 | V    |
| Output Voltage        | 1.8 | -   | 5.5 | V    |

## Software Support

We provide a library for the Step Up 2 Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development boards](#).

Package can be downloaded/installed directly from NECTO Studio Package Manager (recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

## Library Description

This library contains API for Step Up 2 Click driver.

### Key functions

- `stepup2_set_vout` This function sets the voltage output level.
- `stepup2_set_resistance` This function sets a desired resistance by writing to the volatile memory register and the wiper position.

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- `stepup2_enable` This function turns on the power switch and enables the boost mode.

## Example Description

This example demonstrates the use of the Step Up 2 Click board by changing the output voltage.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.StepUp2

## Additional notes and informations

Depending on the development board you are using, you may need [USB UART click](#), [USB UART 2 Click](#) or [RS232 Click](#) to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE [compilers](#).

## mikroSDK

This Click board™ is supported with [mikroSDK](#) - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the [LibStock](#) and installed for the compiler you are using.

For more information about mikroSDK, visit the [official page](#).

## Resources

[mikroBUS™](#)

[Click board™ Catalog](#)

[Click Boards™](#)

[ClickID](#)

## Downloads

[Step Up 2 click example on Libstock](#)

[Step Up 2 click 2D and 3D files v100](#)

[TPS61299 datasheet](#)

[MAX5419 datasheet](#)

[Step Up 2 click schematic v100](#)

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